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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/669,227

09/24/2003

Stefan Bader

5367-44

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03/07/2006

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EXAMINER

ROSE, KIESHA L

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/669,227

Applicant(s)

BADER ET AL.

Examiner

Kiesha L. Rose

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/03, 9/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the filing of the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitations "the distances (D1, D2) and the p-doped layer" in claim 13. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitations "the interface" in claim 14. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 discloses **in which the distances (D1, D2) between the contact elements are chosen taking account of the transverse conductivity of the p-doped layer such that the semiconductor body's interface of the p-doped layer can be energized over the whole area.** It is unclear how the distances are chosen as well as their relationship to the transverse conductivity of the p-doped layer. In addition, it is uncertain as to what is causing the semiconductor body's interface of the p-doped layer to be energized over the whole area and how that really relates to the distances. For purposes of examining the claim is being read as:

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The contact elements have distances between them.

Claim 14 discloses in which the form of the regular grid is chosen such that, when the interface is energized over the whole area, the result is a coverage of the surface of the semiconductor body with the contact layer which is smaller than the coverage when a square grid is used. It is unclear how the regular grid is chosen and what is taken into account when doing so. In addition, it is unclear as to what is causing the interface to be energized over the whole area and what two layers or regions or areas are forming the interface. For purposes of examining the claim is being read as:

In which the form of the regular grid has a coverage of the surface of the semiconductor body with the contact layer which is smaller than the coverage when a square grid is used.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4,6-7,9-12,14-16,18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Marshall et al. (U.S. Patent 6,673,254).

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In re claim 1, Marshall discloses a light-emitting device (Figs. 1a, 1b and 5e) that contains a semiconductor body (16), which has an active zone, in which, for purposes of electrical contact connection, a patterned contact layer (14) is applied on a surface of the semiconductor body, interspaces (15) distributed over the contact layer being provided for the purpose of forming free areas on the surface which are not covered by the contact layer, in which free areas are covered with a mirror (12).

In re claim 2, the mirror is embodied as a closed mirror layer covering the free areas and the contact layer. (Fig. 1a)

In re claim 6, the contact layer contains nickel. (Column 2, line 38)

In re claim 7, the mirror layer contains silver. (Column 6, lines 17-19)

In re claims 3-4, since the contact layer is formed of nickel and the mirror layer is formed of silver then the material of the contact layer links electrically better to the semiconductor body than the material of the mirror layer and the material of the mirror layer would reflect the radiation generated in the active zone better than the material of the contact layer.

In re claim 9, the contact layer comprises contact elements (14) that are separated from one another and in which a connecting layer (12) for making contact among the contact elements is provided on the contact layer. (Fig. 1a)

In re claims 10-12 and 15, the contact elements have the form of cylinders, arranged at nodes of regular grid such as square grid or hexagonal grid. (Column 4, lines 65-67 and column 5, lines 7-8)

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In re claim 14, as far as understood, the form of the regular grid has a coverage of the surface of the semiconductor body with the contact layer which is smaller than the coverage when a square grid is used. Since the regular grid of Marshall is cylindrical, then the result of the coverage is smaller than a square grid. The cylindrical grid has a tip on the contact layer because it is a cone shape, which would make the contact layer have a smaller coverage than a square grid.

In re claim 16, the interspaces are filled with a filler (58) in order to at least partially planarized the surface of the patterned contact layer. (Fig. 5e, Column 8, lines 56-65)

In re claims 18 and 20, the filler contains a transparent and electrically insulating material where the material is SiO₂. (Column 8, lines 58-60)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5,13,17 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall as applied to claims 1 and 16 above, and further in view of Coman et al. (U.S. Publication 2001/0042866).

In re claim 5, Marshall discloses all the limitations except for a p-doped layer. Whereas Coman discloses a light-emitting device (Fig. 3) that contains a semiconductor

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body that is formed by a p-doped layer (20a) made of a nitride compound semiconductor and in which the material of the contact layer forms an ohmic contact with respect to the surface. (Fig. 3, Page 2, Paragraph 0021) The p-doped layer is formed to act as a light-emitting device layer. (Page 2, Paragraph 0021) Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Marshall by incorporating a p-doped layer to act as a light-emitting device layer as taught by Coman.

In re claim 13, as far as understood, when combined, Marshall and Coman disclose that the contacts have a set distance between them. Marshall and Coman references disclose the grids to be square or hexagonal therefore the contacts have distances between them.

In re claim 17, Coman discloses the filler (26a) contains a electrically conductive material, since the filler can be made of metal then it is an electrically conductive material. (Page 3, Paragraph 0023)

In re claims 21,22 and 24, Coman discloses a light-emitting device (Fig. 3) that contains a filler that forms a Bragg reflector (26a) that is produced from dielectrics and is arranged in the interspaces of the contact layer. (Page 3, Paragraph 0023)

In re claim 25, Coman discloses the Bragg reflector contain layer pairs lying one on top of the other, of which respectively one has a high refractive index and one has a low refractive index and in which the number greater than 5 of layer pairs are provided in each Bragg reflector. (Page 1, Paragraphs 6 and 9, Page 3, Paragraph 0023)

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In re claim 23, Coman discloses the Bragg reflector to be produced by epitaxy.

(Page 1, Paragraph 0006)

Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall and Coman as applied to claims 1 and 16-17 above, and further in view of Huang et al. (U.S. Patent 6,693,352).

In re claim 19, Marshall and Coman disclose all the limitations except for the filler to contain zinc oxide or indium tin oxide. Whereas Huang discloses a light-emitting device (Fig. 7) that contain contact layers (36a) with interspaces where the interspaces is filled with a filler that is zinc oxide or indium tin oxide. The filler is zinc oxide or indium tin oxide to function as a transparent conducting oxide. (Column 5, lines 23-33)

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the devices of Marshall and Coman by incorporating the filler to be zinc oxide or indium tin oxide to function as a transparent conducting oxide as taught by Huang.

In re claim 8, Huang discloses the contact layer has a thickness of less than 100nm. (Column 5, lines 10-19)

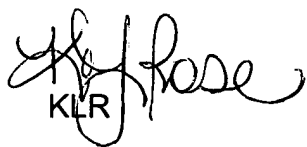
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 571-272-1844. The examiner can normally be reached on T-F 8:30-6:00 off Mondays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KLR